OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERAL RESOURCES MANAGEMENT

POND/IMPOUNDMENT PLAN

Applicant's Name **American Energy Corporation** Pond/Impoundment # **013 As Built**

Type of pond/impoundment **Embankment** Permanent ☐ Temporary ☒

1. DRAINAGE AREA DATA:

   a) Drainage area **47.9** acres
   b) Disturbed area **40.4** acres
   c) Ave. land slope **25** %
   d) Hydrologic soil group **C**
   e) Hydraulic length **5144** ft.
   f) Cover/condition of the undisturbed area **Pasture/Fair**

2. DESIGN STORM CRITERIA:

   a) Method:

      1) Design method(s) including computer programs: **SEDCAD 4.0**

      2) NRCS curve number **various (see run sheets)**

   b) Rainfall Amount/Peak Flow

		Rainfall, in.	Peak flow, cfs.
1)	10 year, 24 hour =	**3.7**	**79.9**
2)	25 year, 24 hour =	**4.2**	**95.3**
3)	50 year, 6 hour = (if permanent)		
4)	100 year, 6 hour = (if 20/20 size)		

3. SIZE:

   a) Dimensions:

1)	Dam height	**18** ft.	4)	Dam downstream slope	**50**	%
2)	Dam width	**12** ft.	5)	Dam upstream slope	**33 1/3**	%
3)	Dam length	**900** ft.	6)	Core length	**N/A** ft. ft. ft.	

   b) Sediment storage volume **8.3** ac. ft. is provided below the **1117** foot elevation.

   c) Stage/Area Data:

		Elevation ft.	Surface Area ac.	Volume ft.
1)	Bottom of pond/impoundment	**1100**	**0.041**	**0.0**
2)	Streambed at upstream toe:	**1100**	**0.041**	**0.0**
3)	Principal spillway inlet:	**1117***	**1.168**	**8.3**
4)	Emergency spillway crest:	**1118**	**1.236**	**9.5**
5)	Top of embankment:	**1120**	**1.367**	**12.1**

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4. PRINCIPAL SPILLWAY:

a) Pipe length **66** ft.
b) Pipe diameter **14** in.
c) Pipe slope **2.9** %
d) Riser diameter **18** in.
e) Riser height **10** ft.
f) Type of pipe **HDPE**
g) Number of anti-seep collars **2**; spacing along pipe **20** ft.
h) Does the design include a trash rack? ☐ Yes, ☒ No.
i) Does the design include an anti-vortex device? ☐ Yes, ☒ No.

5. EMERGENCY SPILLWAY/EXIT CHANNEL:

a) Base width **12** ft.
b) Design flow depth **0.2** ft.
c) Exit slope **9.0**%
d) Exist velocity **2.7** fps
e) Channel lining **Grass Mix**
f) Side slopes **3:1**
g) Freeboard **1.5** ft.
h) Entrance slope **50** %
i) Length of level control section **20** ft.

6. The minimum static factor of safety for this impoundment is **1.5**

7. Provide as an addendum to this attachment a detailed plan view or 2 cross sections of the impoundment.

8. COMMENTS:

*** Riser pipe shall have four (4), 4" holes placed at elevation 1114.5'. Storage below perforations is 5.6 acre-feet.**

9. Is this an MSHA structure? ☐ Yes ☒ No. If "yes," provide the MSHA ID number if one has been assigned .

10. If this is to be retained as a permanent impoundment, submit an addendum to this attachment demonstrating compliance with 1501:13-9-04 of the Administrative Code.

11. I hereby certify that this impoundment is designed to comply with the applicable requirements of 1501:13-9-04 of the Administrative Code using current, prudent engineering practices.

William J. Siplivy — 17 Oct. 2007
Signature — Date

STATE OF OHIO
WILLIAM
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REGISTERED
PROFESSIONAL ENGINEER

Part 3: Section A/H